

Docket No.: HZA-0003  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Katsumi Furuya et al.

Application No.: 10/591,471

Confirmation No.: 1459

Filed: September 1, 2006

Art Unit: Not Yet Assigned

For: PHOTONIC CRYSTAL COUPLING  
DEFECT WAVEGUIDE AND PHOTONIC  
CRYSTAL DEVICE

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Examiner: Not Yet Assigned

**INFORMATION DISCLOSURE STATEMENT (IDS)**

MS PCT  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Submitted herewith on Form PTO-1449 or PTO/SB/08 is a listing of documents known to Applicant in order to comply with Applicant's duty of disclosure pursuant to 37 CFR 1.56. Applicant respectfully requests that the listed documents be considered by the Examiner and formally be made of record in the present application and that an initialed copy of Form PTO-1449 or PTO/SB/08 be returned in accordance with MPEP §609.

☒ A copy of each listed document is being submitted to comply with the provisions of 37 CFR §§1.97 and 1.98

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicant does not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* prior art reference against the claims of the present application.

Concise Explanation of Relevancy of the Document

- ☒ Documents having neither English translation nor English abstract relates to the subject matter of the above-identified application. English translation of the documents are not readily available; however, the absence of such translations does not relieve the PTO from its duty to consider the submitted documents(37 C.F.R. §1.98 and MPEP §609).
- ☒ This Information Disclosure Statement is being filed before the mailing date of a first Office Action on the merits in the present application. **No fee is required** (37 C.F.R. §1.97(b)). The Patent Office is **NOT AUTHORIZED** to charge deposit account 18-0013 under 37 CFR §§ 1.97(c)(2) and 1.17(p). However, **ONLY IF** a first Office Action on the merits was mailed before filing of this Information Disclosure Statement, please charge deposit account 18-0013 in the amount of \$180.00 for payment of the fee under 37 CFR §§ 1.97(c)(2) and 1.17(p).
- ☒ Please charge any fee deficiency or credit any overpayment to Deposit Account No. 18-0013 as needed to ensure consideration of the disclosed information.

Dated: May 21, 2007

Respectfully submitted,

By 

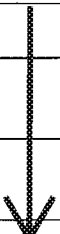
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Substitute for form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	10/591,471
				Filing Date	September 1, 2006
				First Named Inventor	Katsumi Furuya
				Art Unit	N/A
				Examiner Name	Not Yet Assigned
Sheet	1	of	3	Attorney Docket Number	HZA-0003

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T <sup>6</sup>
/QL/	BA	JP-2004-045709-A	02-12-2004	NEC Corp. et al.		
	BB	JP-2004-004419-A	01-08-2004	Japan Science & Technology Corp.		
	BC	JP-2003-215367-A	07-30-2003	Mitsubishi Electric Corp.		
	BD	JP-2003-156642-A	05-30-2003	NTT Corp.		
	BE	JP-2003-043273-A	02-13-2003	Hitachi Cable Ltd		E
	BF	JP-2002-303836-A	10-18-2002	NEC Corp		
	BG	JP-2002-277659-A	09-25-2002	NTT Corp.		E
	BH	JP-2002-196296-A	07-12-2002	Mitsubishi Electric Corp		E
	BI	JP-2002-169048-A	06-14-2002	NEC Corp Autocloning Technology KK		E
	BJ	JP-2001-249235-A	09-14-2001	NTT Corp.		E
	BK	JP-2001-281480-A	10-10-2001	NEC Corp.		E
	BL	JP-2001-072414-A	03-21-2001	Japan Science & Technology Corp		
	BM	JP-2001-518707-A	10-16-2001	SIEMENS Aktiengesellschaft		E
	BN	WO-99/17349-A	04-08-1999	SIEMENS Aktiengesellschaft		E

\*EXAMINER: Initial if information considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>	
/QL/	CA	A. Martinez, et al., "Ultrashort 2-D Photonic Crystal Directional Couplers", IEEE Photonics Technology Letters, Vol. 15, No. 5 pp. 694-696 (05/2003)		
	CB	Morten Thorhauge, et al., "Efficient photonic crystal directional couplers", Optics Letters, Vol. 28, No. 17, pp. 1525-1527 (09/01/2003)		
	CC	Katsumi Furuya et al., "Design of small optical switch with 4-port directional coupler in two-dimensional photonic crystal slab", Photonic Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), p. 203		
	CD	Katsumi Furuya et al., "Theoretical study for shortening optical switch with 4-port directional coupler in 2-D photonic crystal slab", The 51st Japan Society of Applied Physics Academic Lecture Materials, p.1165, (03/2004)		
	CE	Noritsuqu Yamamoto et al., "Photonic crystal waveguide directional coupler with short coupling		

Examiner Signature	/Quyen Leung/	Date Considered	06/05/2008
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Sheet	2	of	3	Attorney Docket Number	HZA-0003

		length and high extinction ratio", The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, pp. 67-70 (07/2004)	
/QL/	CF	Stefano Boscolo et al., "Coupling and Decoupling of Electromagnetic Waves in Parallel 2-D Photonic Crystal Waveguides", IEEE Journal of Quantum Electronics Vol. 38, No.1, pp. 47-53, (01/2002)	
	CG	M. Tokushima et al., "Photonic crystal line defect waveguide directional coupler", Electronics Letters, Vol. 37, No. 24, pp. 1454-1455 (11/2001)	
	CH	J. Zimmermann et al., "Photonic crystal waveguide directional couplers as wavelength selective optical filters", Optics Communications 230, pp. 387-392 (02/2004)	
	CI	"Recent progress and future prospects of photonic crystal research - Revised Edition - Toward a technology roadmap (Photonic crystal breakthrough technology forum)", Optoelectronic Industry and Technology Development Association, 14-013-1, pp. 34-36 (03/2002)	
	CJ	H. Yamada, "Theoretical analysis of photonic crystal directional coupler based optical switches", Institute of Electronics, Information and Communication Engineers Electronics Society Conference, C-4-7, pp249 (2002).	
	CK	K. Tajima, "All-Optical Switch with Switch-Off Time Unrestricted by Carrier Lifetime", Jpn. J. Appl. Phys. Vol. 32 Part 2 No. 12A, pp. L1746-L1749 (12/01/1993).	
	CL	K. Kishioka, "Characteristics of the Optical Resonator Composed of the Nonlinear Directional Coupler", IEEE Trans. FM., Vol.123, No.12 (2003).	
	CM	M. Tokushima et al., "Photonic crystal line defect waveguide directional coupler", Electronics Letters, Vol.37, No.24, pp. 1454-1455 (11/22/2001).	
	CN	H. Benisty et al., "Models and Measurements for the Transmission of Submicron-Width Waveguide Bends Defined in Two-Dimensional Photonic Crystals", IEEE Journal of Quantum Electronics, Vol.38, No.7, pp.770-785 (07/2002).	
	CO	J. Moosburger et al., "Enhanced transmission through photonic-crystal based bent waveguides by bend of engineering", Applied Physics Letters, Vol. 79, No.22, pp. 3579-3581 (11/26/2001).	
	CP	A. Talneau et al., "Photonic-crystal ultrashort bends with improved transmission and low reflection at 1.55µm", Applied Physics Letters, Vol. 80, No.4, pp. 547-549 (01/28/2002)	
	CQ	Noritsugu Yamamoto et al., "Photonic crystal directional coupler with short coupling length and high extinction ratio", The 65th Japan Society of Applied Physics Academic Lecture Materials, p.936, Tohoku Gakuin University (09/2004)	
	CR	Toru Ogawa et al., "Photonic crystal directional coupler switch with short switching length and wide band width", The 65th Japan Society of Applied Physics Academic Lecture Materials, p.936, Tohoku Gakuin University (09/2004)	
	CS	Daisuke Mori et al., "Dispersion-Controlled Group Delay Device by Index-Chirped Photonic Crystal Waveguide Directional Coupler", The 51st Japan Society of Applied Physics Academic Lecture Materials, p.1147, Tohoku Gakuin University (03/2004)	
	CT	International Preliminary Report mailed on December 7, 2006.	
	CU	International Search Report mailed on July 5, 2005.	
	CV	International Preliminary Report mailed on September 14, 2006.	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature	/Queen Leung/	Date Considered	06/05/2008
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